

REMARKS

Claims 10-21 are pending in this application.

In the Office Action, the Examiner indicated that dependent claims 15 and 17 are allowable. Applicant gratefully acknowledges the Examiner's indication of allowable subject matter. Applicant has rewritten claim 15 as new independent claim 20 and claim 17 as new independent claim 21. Thus, Applicant submits that claims 20 and 21 are also allowable.

The Examiner provisionally rejected claims 10-14, 16 and 18 under the judicially created doctrine of obviousness-type double patenting over claims 1, 2, 5, 7 of U.S. Patent No. 6,657,722 in view of Hiroshi (JP 06288903). Applicant respectfully traverses the rejection as it is applied to the claims as amended.

As to claim 10, the Examiner disclosed that it is not patentable since it would have been easily made by those who are skilled in the art according to the '722 patent in view of the Hiroshi reference. Along with the amendment that has been made to claim 10, Applicant presents the following to traverse the double patenting rejection.

1. The invention of the present application is a two-side multiple lamp online inner quality inspection system comprising

transport means for continuously running and conveying objects of inspection one by one by placing each of the objects on a receiving tray, wherein a transmission light passage being formed in the receiving tray to vertically penetrate the center part thereof and a light blocking receiving seat being arranged at the upper part of said transmission light passage in an annular shape to elastically engage the object in a tight contact therewith,

light projecting means for concentratedly projecting beams of light on the object on the receiving seat from lateral direction both left and right of the transport path by using a plurality of light projecting lamps at a predetermined position of said transport means,

light receiving means arranged upwardly to converge and receive transmission light coming through the inside of the object of inspection and passing downwardly through the transmission light passage of the receiving tray out of the beams of light projected while conveying, and

the means for leading the transmission light to spectral analysis device and making spectral analysis on thereof.

2. The invention of Hiroshi reference (“Cited Reference 1”) is an inner quality inspection system in a primary stage that the present applicant invented, and it is applying the tray with a hole (element no. 3) in the center thereof, but the tray has to be stopped from moving at the inspection stage, and move attachment pat (element no. 6) upward and go into the hole of the stationary tray to contact and attach to the under surface of the object to lead the transmission light to the optical fiber, which is publicly known.

However, the invention of the cited reference 1 is not capable of making spectral analysis by receiving the transmission light from underneath the receiving tray for conveying the object that runs and conveys without stopping, recited as “transport means for continuously running and conveying” in claim 10.

Also, it is not indicated or there is no clue that it is capable of receiving the transmission light from underneath the receiving tray while the receiving tray having the transmission light passage and the conveyor which runs and conveys continuously are combined and running.

3. The invention of US patent No. 6,657,722 (“Cited Reference 2”) is a US patent obtained by the present Applicant, which was filed three month before the filing date of the present

application. The present application is an inner quality inspection system filed by the identical applicant to the '722 patent before it was laid-open to public, and as it was amended by the amendment filed along with the application, it is different from the cited reference 2.

The invention of the cited reference 2 is setting the light projecting means and light receiving means facing each other with the object on the transport conveyor in between, so, for example, belt conveyor, etc, can be applied for a transport means, but it is not disclosed to locate the light receiving means upwardly underneath the transport conveyor to receive the transmission light.

Further, the condenser lens used in the cited reference 2 is set facing the lateral direction, and it is not disclosed to locate the condenser lens upwardly, and also it is not disclosed to dust-proof the light receiving window of the condenser lens when it is set upwardly.

4. In addition, as for setting the light blocking shutter to make and break the projecting window at the light projecting means, cited reference 1 discloses the heat ray cutting filter (element no. 65) in front of each of the light projecting lamps one by one, but it is not capable of blocking the projected light.

The invention of the cited reference 1 inspects the object while the receiving tray is stopped and remaining still, so it is set to prevent the object (fruit) from being damaged by heat of heat ray while the light is being projected during the object on the receiving tray remains still, but it is not disclosed to block all the projected light to prevent the receiving tray from being projected by light.

When the light projection is not needed, to turn off the light is the general method, but this online inspection system is applying the light projecting lamp that project the beam of light including the near-infrared region (as indicated in the section of background art). This inspection system is to make spectral analysis, so the spectral intensity (spectral power) of the beam of light projected by the light projecting lamp has the important meaning.

So, once the light projecting lamp is turned off, it generates the radical temperature change including the perimeter of the lamp, and when it is turned on, it takes unproductive waiting time until the spectral intensity of the beam of light projected will be back in identical condition to the condition before the light turned off, so it is not able to restart inspection immediately after turning the light on, therefore the present invention sets the light blocking shutter to block the beam of light projected with the light on. That is, by setting the light blocking shutter, it will be able to restart the inspection immediately after the projection is restarted after the break of projection.

5. The inventions of the cited reference 1 and 2 cannot expect to have the following functions and effects of the invention of the present application, which is described in the amended claims:

1) The construction of transport means having the underneath of the receiving tray, which runs through the transport path, and which is arranged to be able to locate the light receiving means fixed close to the underneath of the receiving tray running through the inspecting position is not disclosed at all.

2) The construction of light receiving means having an air blow hole arranged to blow an air from lateral direction toward the center of upper surface of light receiving window of lens hood of condenser lens located upwardly underneath the receiving tray, and which is arranged to proof upper surface of the condense lens from dust is not disclosed at all.

3) The construction of light projecting means having a light blocking shutter at the projecting window of the lamp box to make and break thereof to block light from being projected on the object with the light of lamp on is not disclosed at all.

Based upon the above amendments and remarks, applicants respectfully request reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference with applicants' attorney would expedite prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,



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